UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,443	07/22/2004	Chin-Yee Ng	57391US003	5326

32692 7590 05/16/2006

3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER	
CHU, HELEN OK	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/502,443	NG ET AL.	
	Examiner	Art Unit	
	Helen O. Chu	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-66 is/are pending in the application.

4a) Of the above claim(s) 32-66 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-31 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) 1-66 are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2/16/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-31, drawn to an electrochemical device where the cooling bladder has inlet and outlet ports and a heat transfer medium passing through the inlet and outlet ports to control an operating temperature of the electrochemical cell.

Group II, claim(s) 32-51, drawn to an electrochemical device where the cooling bladder having a strength sufficient to hold a pressure that maintains the electrochemical cells in a state of compression during charge and discharge cycling.

Group III, claim(s) 52-66, drawn to a method of providing cooling electrochemical device

2. The inventions listed as Groups I do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Any international application must relate to one invention only or to a group of invention so linked as to from a single general inventive concept (see MPEP 1850. As demonstrated by Verhoog (US Patent 6,296,968), at least one independent claim of the application is anticipated by or obvious in view of the prior art. Specifically, the special technical feature of Group I is a product and the cooling bladder of this product has inlet and outlet ports.

The inventions listed as Groups II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Any international application must relate to one invention only or to a group of invention so linked as to from a single general inventive concept (see MPEP 1850. As demonstrated by Kaufman et al. (US Patent 4,945,010), at least one independent claim of the application is anticipated by or obvious in view of the prior art. Specifically, the special technical

feature of Group II is the cooling bladder having sufficient strength to hold a pressure that maintains the electrochemical cell in a state of compression during charge and discharge cycling.

3. During a telephone conversation with Lucy C. Weiss on January 23, 2006 a provisional election was made with traverse to prosecute the invention of Group 1, claims 1-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 32-66 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-15, 17, 20-24, 27-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Verhoog (US Patent 6,296,968).

In regards to claim 1 and 14, Verhoog teaches each of the electrochemical cells comprising opposing first and second planar surfaces (Figure 4) and being subject to volumetric changes during charge cycling (Column 1, Lines 24-25) with a unitary cooling

tank (Figure 4) formed of a polypropylene material (Column 4, Line 40) and having an inlet fluid orifice and an outlet fluid orifice (Column 2, Lines 34-36), the cooling bladder having a substantially flat shape (Figure 4) and circulates liquid between the inlet and outlet (Column 1, Lines 55-60).

In regards to claims 2-7, 10 and 23, the Verhoog teaches a cooling tank, which covers all the surface area of the electrochemical cells with continuous and hollow interior flanges (Applicant's flow channels), which the medium passes (Figure 3 and 4). The cooling tank comprises serpentine ribs (Applicant's support arrangement and thickened sections; Column 5, Line13; Component 41) located on the outer surface and at bends of the tank that inhibits restriction of cooling medium (Figure 4).

In regards to claims 8 and 9, the Verhoog teaches an electrolyte that fills the cells and disposed at all areas of the cell (Column 4, lines 47-49).

In regards to claims 11-13, The Verhoog reference teaches a plurality flanges that causes the fluid flowing in the compartment to flow alternatively in the opposite direction (Column 4, Lines35-37).

In regards to claim 15, the Verhoog reference teaches a tank made of polypropylene material and each flange of the tank is stacked one on top of each other. Together, all the polypropylene material forms a plurality of material layer.

In regards to claim 17, the Verhoog reference teaches the polypropylene tank which consist of ribs have the height of 3mm to 4mm (Column 5, Lines 15-16).

In regards to claim 20-22 and 27, the Verhoog reference teaches an electrochemical assembly uniformly cooled (Column 1, Lines 44), hence, there will not

be any temperature difference and the heat transfer medium entering the electrochemical cell has to be constant.

In regards to claim 24 and 28-31, the Verhoog reference teaches a nickel metal hydride (Column 1, Line 21); it is inherent for a nickel metal hydride to operate between 20°C to 130°C. The Verhoog reference illustrates four edges of which the cooling tank contacts (Figure 1) and a housing incorporates two orifices for each cell respectively receiving a terminal of each polarity (Column 4, Lines 45-47) and a manifold that has an inlet and outlet manifold (Figure 1).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verhoog (US Patent 6,296,968).

In regards to claim 18, the Verhoog reference discloses the claimed invention except for a plurality of cooling tanks. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a plurality of cooling tanks, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. (MPEP 2144.04 VI).

In regards to claim 19, the Verhoog reference teaches the elements of claims 1-13, 19-24, 27-31 and incorporated herein. It would have been obvious if the

electrochemical cell ran for a long period of time, the heat transfer medium would be consumed and would eventually be less than 50% by volume or weight.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verhoog (US Patent 6,296,968) as applied to claims 1-13, 19-24, 27-31 and in further view of Fitts et al. (US 2002/015333).

The Verhoog reference teaches the elements of claims 1-13, 19-24, 27-31 and incorporated herein, however, the Verhoog reference does not teach a thermally conductive material comprises a metallic layer disposed between a first polymer layer and a second polymer layer. The Fitts et al. reference teaches a core material that is made of metallic, non-metallic or metallic with non-metallic materials that has a high thermal conductivity. Therefore, it would be obvious to one skilled in the art at the time the invention was made to in corporate a layer of metallic, non-metallic or metallic with non-metallic material into the heat transfer system as taught by Verhoog to insure the system is transferring heat efficiently.

9. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verhoog (US Patent 6,296,968) as applied to claims 1-13, 19-24, 27-31 and in further view of Gyoten et al. (US 2001/0036567).

The Verhoog reference teaches the elements of claims 1-13, 19-24, 27-31 and incorporated herein, however, the Verhoog reference does not teach a coolant to be water or aqueous ethylene glycol. The Gyoten et al. reference teaches water or aqueous ethylene glycol to be a coolant in order to prevent destruction of the cell by varying temperatures (Paragraph 47).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HOC

DAH-WEI YUAN
PRIMARY EXAMINER